SHORELANDS WATER ASSOCIATION (PWSNO 1280169)
SOURCE WATER ASSESSMENT REPORT

December 3, 2001

State of Idaho
Department of Environmental Quality

SOURCE WATER ASSESSMENT FOR SHORELANDS WATER ASSOCIATION

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Idaho Department of Environmental Quality is completing the assessments for all Idaho public drinking water systems. The assessment for your particular drinking water source is based on a land use inventory within a 1,000 foot radius of your well, your water quality history, construction characteristics associated with your well or wells, and site specific sensitivity factors associated with the aquifer your water is drawn from.

This report, *Source Water Assessment for Shorelands Water Association* describes the public drinking water source, potential contaminant sites located within a 1000-foot boundary around the drinking water source, and the susceptibility (risk) that may be associated with any associated potential contaminants. This assessment, taken into account with local knowledge and concerns, should be used as a planning tool to develop and implement appropriate protection measures for this system. **The results should <u>not</u> be used as an absolute measure of risk and are not intended to undermine the confidence in your water system.**

Potential Contaminant Inventory. Shorelands Water Association, located on the eastern side of Lake Coeur d'Alene near Carlin Bay, gets drinking water from a 520 foot deep well. Potential contaminant sources inside the 1000-foot boundary around the well include surface waters, public and private roads, and septic tanks.

The well is located within approximately 50 feet of an ephemeral stream, and needs to be evaluated to determine whether it is groundwater under direct influence of surface water. The exact number of septic tanks serving households inside the 1000-foot zone and their locations relative to the well are not documented in the public water system file for Shorelands, but their presence is noted on the contaminant inventory. Table 1 summarizes information about the sites, and contaminants of concern that may be associated with them. The map on page 5 of this report shows the 1000-foot boundary around the well and approximate locations of potential contaminant sites.

Table 1. Shorelands Water Association Potential Contaminant Inventory

Map ID	Source Description	Potential Contaminants	Source of Information
1	Surface Water	Microbial	USGS Map
2	Roads	IOC, SOC, VOC, Microbial	USGS Map
3	Septic Tanks	IOC, Microbial	

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Water Quality History. Shorelands Water Association is required to monitor quarterly for bacterial contamination and yearly for nitrates. The water tested positive for total coliform bacteria in March 1999, October and December 1997, and October and November 1996. Nitrates have not been detected in samples submitted for testing.

Well Construction. The Shorelands Water Association well was drilled to a depth of 360 feet in 1991 and was deepened to520 feet in 1993. The casing extends 420 feet below the surface, terminating in a shale stratum. The bottom 60 feet of the casing are perforated. Current Idaho Department of Water Resources standards for well construction require the wall thickness of a six inch casing to be a minimum of 0.28 inches. The wall thickness of the Shorelands well casing is 0.25 inches.

The static water level in the well is 75 feet below ground. A bentonite clay surface seal for the well stops at 20 feet in a broken basalt/clay layer which may or may not be impervious. The well is outside of the flood plain for the lake, and is protected from surface water run off. The casing extends 19 inches above ground surface. The area immediately around the casing is covered with a tarpaulin.

Well Site Characteristics. Soils in the 1000-foot zone around the well are generally moderately to well drained. Points were assessed against the well in the susceptibility analysis because well-drained soils are less protective of ground water than poorly drained sedimentary type soils. When the well was drilled, the first water bearing stratum was encountered between 196 and 360 feet below the surface. 134 feet of clay and shale form a protective layer between the first groundwater encountered during drilling and the broken basalt/clay layer near the surface.

Susceptibility to Contamination. Shorelands Water Association tests quarterly for bacterial contamination. Times when the samples were positive for Total Coliform have occurred most frequently in late Autumn during periods of low usage. Mike Nelson of Panhandle Health District said microbial contaminants appear to enter the system through the reservoir or distribution lines rather than from the well itself. The ephemeral stream about 50 feet from the well is in a steep gully and down gradient from the well.

A susceptibility analysis DEQ conducted on the Shorelands Water Association well that incorporated information from the public water system file, from Mike Nelson and from Earl Clark ranked the well moderately susceptible to inorganic chemical (IOC) and microbial contamination. The well ranked at low risk to contamination with synthetic and volatile organic compounds (SOC, VOC). The susceptibility analysis worksheet for your well on page 6 of this report shows how your well was scored. Formulas used to compute the final susceptibility scores are shown on the bottom of the worksheet.

Source Water Protection. This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For Shorelands Water Association source water protection activities should focus on bringing the system into full compliance with Idaho Rules for Public Drinking Water Systems as outlined in the 1999 Sanitary Survey.

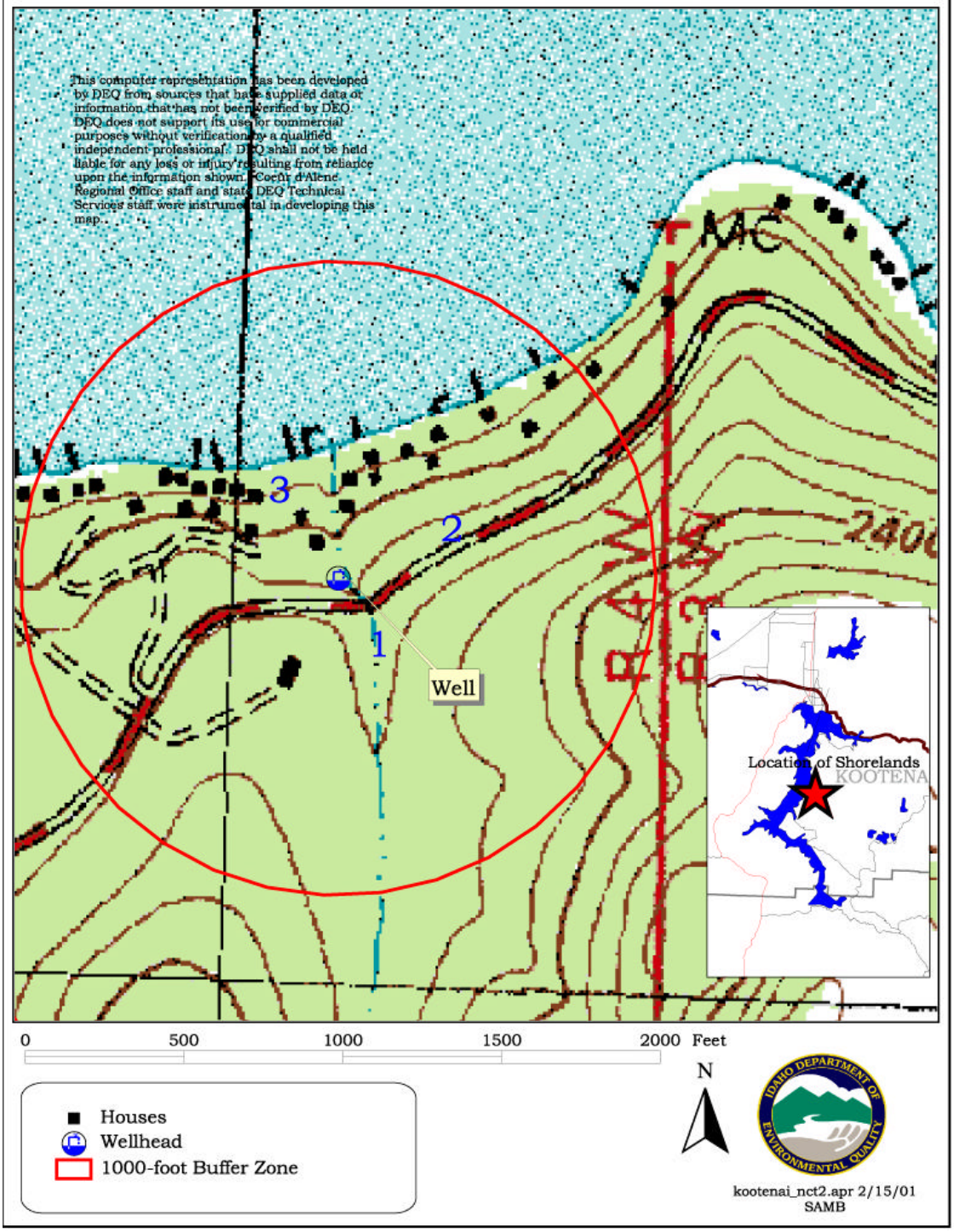
Diverting storm water runoff away from the well is important since the well is located downhill and within 100 feet of Highway 97. Because Shorelands Water Association doesn't have direct jurisdiction over the entire 1000-foot protection zone around its wells, it will be important to form partnerships with neighbors, and public agencies to regulate land uses that can degrade ground water quality. For example you can enlist the cooperation of the highway district to limit the use of road maintenance chemicals in the protection zone. Neighbors should be informed that they live in a well recharge zone, and can be asked to participate in water protection activities like household hazardous chemical collection days, septic tank maintenance workshops and the like. Another activity to consider is a periodic inventory of the area delineated around your wells to document land use changes, new businesses, roads, houses, and septic systems. The goal of source water protection is to maintain current water quality for the future despite the changes we can expect with population growth in North Idaho.

For assistance in developing source water protection strategies please contact Tony Davis at the Coeur d'Alene Regional DEQ office at 208 769-1422.

DEQ website:

http://www2.state.id.us/deq/

Figure 1.Shorelands Water Association. Delineation and Potential Contaminant Inventory.



Attachment A

Shorelands Water Association
Susceptibility Analysis
Worksheet

Ground Water Susceptibility Analysis

Public Water System Name : **SHORELANDS WATER ASSN** Well# : **WELL #1**

Public Water System Number : **1280169** 3/28/01

1. System Construction		SCORE			
Drill Date	5/17/91				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	1999			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	YES	0			
Well located outside the 100 year flood plain and protected from surface runoff	YES	0			
Total System Construction Score		**1**			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	NO	0			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	YES	0			
Total Hydrologic Score		**3**			
		IOC	VOC	SOC	Microbial
3. Potential Contaminant / Land Use - ZONE 1A (Sanitary Setback)		Score	Score	Score	Score
Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		**0**	**0**	**0**	**0**
Potential Contaminant / Land Use - ZONE 1B (1000-Foot Boundary)					
Contaminant sources present (Number of Sources)	YES	2	1	1	3
(Score = # Sources X 2) 8 Points Maximum		**4**	**2**	**2**	**6**
Sources of Class II or III leacheable contaminants or Microbials	YES	2	1	1	
4 Points Maximum		**2**	**1**	**1**	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B		0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		**6**	**3**	**3**	**6**
Cumulative Potential Contaminant / Land Use Score		**6**	**3**	**3**	**4**
4. Final Susceptibility Source Score		**6**	**5**	**5**	**6**
5. Final Well Ranking		Moderate	Low	Low	Moderate

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The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Ranking:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

> 13 High Susceptibility.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund@ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.